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But Rudolf and Szirtes¹² and Angenheister¹³ have since shown that the latter belong to a branch of the first reflected waves. However, Angenheister was able to follow the direct compressional waves to about 145° , which is a great achievement. Beyond this we have no proof for their existence as yet. Hence it will be seen how weak is the author's argument for a viscous fluid state of the earth's core. If it is a viscous fluid, the longitudinal waves should be transmitted and the transverse waves should not. If it is an elastic solid, both the longitudinal and the transverse waves should be able to traverse it along some path, not necessarily a straight one. Do they? Future investigation may tell us. For the present, modern seismologists and geophysicists¹⁴ suppose the core of the earth to be a rigid solid.

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THE BEGINNING OF AMERICAN GEOLOGY

TO THE EDITOR OF SCIENCE: I have been reading with very great pleasure Dr. J. M. Clarke's interesting account of the beginnings of American geology in his life of James Hall, which has recently been published.

On page 218 he refers to the statement that Charles T. Jackson "drew a plan for the New York Survey, a statement repeated in Appleton's *Cyclopedia of American Biography*" but concerning which he (Clarke) has "never seen documentary evidence."

Without in any way desiring to dispute Dr. Clarke's contention it may be worth while to say that the sketch in the *Cyclopedia* referred to was written by me and that a proof of the sketch received the approval of one member of Jackson's family. The circumstances are quite

¹² E. Rudolf und S. Szirtes, *Phys. Zeitschr.*, August 1, 1914.

¹³ *Op. cit.*, pp. 11, 24, 27.

Also: G. Angenheister: "A study of Pacific Earthquakes," *The New Zealand Journal of Science and Technology*, Vol. IV, No. 5, 1921, pp. 216-217, 224.

¹⁴ Cfr. A. Sieberg: "Aufbau und physikalische Verhältnisse des Erdkörpers unter besonderer Berücksichtigung der Erdrinde," *Geologische Rundschau*, Band XII, Heft 6/8, 1922, pp. 346-359.

clear in my memory. Owing to Jackson's death I did not know to whom to send the proof until, telling my trouble to Henry Carrington Bolton, he called my attention to the fact that Jackson's son or nephew had been with him in the class of '62 in Columbia. This information resulted in my submitting the sketch to some proper person who not only approved the article but sent me a portrait of Jackson showing him seated on a chair with both hands on his knees extending outward holding medals.

It is possible that the item about the New York Survey came from the younger Silliman's masterly article on the "Contributions of American Chemists" that he delivered at the Centennial of Chemistry held in Northumberland in 1874, and which was published in the *American Chemist*. If so, then the information came to Silliman directly from Jackson.

May I add for the information of students of the history of chemistry in America that Jackson received pupils in his laboratory in Boston, just as Booth and Garrett did in Philadelphia, and that it was in his laboratory that Charles A. Joy, who later held professorial appointments in Union and Columbia, received his early knowledge of chemistry before going to Göttingen.

Dr. Clarke persists in writing O. M. Mitchel's name with two l's. Mitchel was a very remarkable man and like Jackson was conspicuous for not being able to carry out the great things that he had in his mind. He died of yellow fever during the Civil War, and, while holding important commands, so persistently pestered Halleck with plans and recommendations to cut the Confederacy in two that he was removed and sent to Hilton Head.

If Dr. Clarke should issue a second edition of his valuable contribution to the history of science, I would suggest that Newberry's connection with the Sanitary Commission was rather administrative than medical, as can be seen by his printed report of which a digest appears in the article on Newberry in the "Cyclopedia of American Biography."

The unfortunate experiences of many of the early State surveys has been very fully told by Merrill in his valuable "History of Ameri-

can State Geological and Natural History Surveys" but those of us who were so fortunate as to be students under Newberry can never forget the time when, owing to the changes in political administration in Ohio, he found himself displaced by one of his subordinates. Newberry had chosen from his pupils promising young men such as Hooker, Irving, Newton and others who worked up the results of their field work at Columbia under Newberry's immediate supervision. That the work was not done in Ohio was urged against it and he was forced out of his office as state geologist. It was the beginning of the end, and dear "old Uncle John" never recovered from the blow.

Perhaps in connection with these statements about Newberry it may be worth while to recall the first time I ever saw Hall. The National Academy of Sciences held its fall meeting in 1877 at Columbia University, and it was the last meeting over which the distinguished and venerable Henry presided. It was the only time that I ever saw that great outstanding figure in American science and I shall never forget the dignified manner with which he held the chair. I also recall the dapper appearance of T. Sterry Hunt, who never missed an opportunity of saying something about every paper presented.

In the afternoon a meeting had been arranged for the geologists in Newberry's lecture room in the old School of Mines building on Fourth Avenue, at which Hall was to present a paper. As I recall the experience, he spoke without notes and undertook to explain the relation between certain strata in New York State and how they extended into the neighboring State of Ohio. When he had finished, Newberry promptly contradicted his assertions, contending that while Hall might know all about the geology of the State of New York, yet the conditions in Ohio were not as he represented them to be. Then followed a scene somewhat similar to the one described by Dr. Clarke, in which Hall agreed to eat his hat, for in this outburst he expressed a willingness to wager any amount on the correctness of his assumptions. To which Newberry retorted that it was not a question of a wager or money but simply a question of facts, and that in

this case the facts in Ohio failed to substantiate Hall's point of view.

Of course our sympathies were all with Newberry, for we felt that as state geologist of Ohio he ought to know what the conditions were in Ohio better than any one else. I wonder who was right?

MARCUS BENJAMIN

AN OPPORTUNITY

PROFESSOR W. N. BOLDYREFF, M.D., for ten years chief assistant to the famous Russian physiologist, Pavlov, in Petrograd; from 1912 to 1918 professor of pharmacology in Kazan University and for two years lecturer in physiology in the universities of Tokyo, Kyoto and Osaka; recipient of several Russian and German prizes and honors for scientific work; author of about fifty scientific papers mostly on the physiology of digestion, some of which have been translated into English, French, German, Swedish, Spanish, Czech and Japanese, and associate editor of several Russian, German and English medical and pharmacological journals, is now in this country, without a position, and in real distress. He is most anxious to find a place in some American university or medical school. His special lines of work are physiology, biochemistry and pharmacology. He has also worked in therapeutics and surgery and analyses of water, foods and medicines. He has an offer of a position in a European university, but is unable to find means to go to Europe. He would be glad to receive even a temporary position as professor, lecturer or laboratory worker.

I have written to the heads of several American universities on behalf of Dr. Boldyreff, but his need is so urgent that there is no longer time for me to continue, by correspondence, the rounds of our institutions. Hence I take this means of calling the attention of university and medical school authorities to what seems to me an admirable opportunity not only to obtain the services of an unusually competent physiologist and pharmacologist, but to save a scientific man of merit from utter despair and whatever its consequences may be.

VERNON KELLOGG

NATIONAL RESEARCH COUNCIL,
WASHINGTON, D. C.